**Omnitron Systems Technology, Inc.**

# *iConverter*® 4Tx 4-Port 10/100BASE-TX Managed Ethernet Switch User Manual

Port 1 (P1)
Port 2 (P2)
Port 3 (P3)
Port 4 (P4)

| Model Type | Connectors | Distance |
|---|---|---|
| 8480-4 | RJ-45 x 4 | 100m |

For wide temperature (-40 to 60º C) modules, add a "W" to the end of the model number. Consult factory for other configurations and extended temperature (-40 to +75º C) modules.

## OVERVIEW:

The Omnitron ***iConverter*** 4Tx Managed Switch module is a compact 4-Port 10/100 Ethernet switch that can be expanded across the ***iConverter*** chassis. When installed in an ***iConverter*** chassis, the 4Tx features two 10/100 Ethernet Backplane Ports that connect to adjacent ***iConverter*** modules. This design permits flexible network configurations like the unique in-band management (remote access of management module without additional wire uplink) and versatile multi-module configurations (see APPLICATION EXAMPLE section of this manual for details). The ***iConverter*** 19-Module, 5-Module and 2-Module chassis all have Backplanes that facilitate connectivity between adjacent modules. The ***iConverter*** 1-Module chassis supports 4Tx as standalone 4-Port switch.

The 4Tx supports UTP auto-negotiation for 10/100Mbps speeds in Full-Duplex and Half-Duplex modes, and also features automatic UTP crossover capability for hassle-free attachment to hubs, switches and workstations. DIP-switches are available for configuring UTP Ports 1 and 2, with all four ports configurable via software control.



## MOUNTING AND CABLE ATTACHMENT:

***iConverter*** modules are hot-swappable and can be installed into any chassis in the ***iConverter*** family.

1. After configuring the DIP-switches, carefully slide the ***iConverter*** module into the installation slot, aligning the module with the installation guides. Ensure that the module is firmly seated against the Backplane.
2. Secure the module by fastening the panel thumb screw (attached to the module) to chassis front.
3. If the chassis also has a management module installed, configure the 4Tx via the management module.
4. Attach the UTP ports via a Category 5 cable to a 10BASE-T or 100BASE-TX Ethernet device.

## LED INDICATORS:

| LED | Color | Description |
|---|---|---|
| **Power:** | Yellow | On—Power |
| **Port 1-100 Link**: | Green | On—Link/Blink—activity |
| **Port 1-10 Link**: | Green | On—Link/Blink—activity |
| **Port 2-100 Link**: | Green | On—Link/Blink—activity |
| **Port 2-10 Link**: | Green | On—Link/Blink—activity |
| **Port 3-100 Link**: | Green | On—Link/Blink—activity |
| **Port 3-10 Link**: | Green | On—Link/Blink—activity |
| **Port 4-100 Link**: | Green | On—Link/Blink—activity |
| **Port 4-10 Link**: | Green | On—Link/Blink—activity |



### 4Tx Advanced Features:

The 4Tx features PortVLAN control on the UTP and Backplane Ports. PortVLAN restricts broadcast data to predetermined network paths, therefore eliminating unauthorized packet-sniffing. Other advanced features include Port Access Control which facilitates enabling and disabling of individual UTP ports, and reporting of MIB statistics. MIB statistics are available for 32 variables per port, reporting a wide range of real-time packet statistics to provide performance and operational monitoring.

**Note that software control for configuring Advanced Features listed above requires a chassis with an *iConverter* Management Module, such as the Network Management Module (NMM) or the 10/100M Media Converter with Integrated Management.**

**For more information on using and configuring the Advanced Features, please refer to the *NetOutlook*™ Management Software user manual.**

## PORT STRUCTURE:

### Front-Panel and Backplane Ports:

Using a 6-port switch architecture, the 4Tx features four 10/100Mbps UTP ports on the front-panel and two additional 10/100Mpbs Ethernet connections on the Backplane Ports ("A" and "B"). The Backplane Ports allow Backplane Ethernet connectivity between adjacent modules in an ***iConverter*** chassis.

Between each two adjacent chassis slots is a Backplane Link (A or B), which can carry the 10/100Mbps Ethernet data between the two modules. Some switch-based ***iConverter*** modules have a Backplane Port A and a Backplane Port B. When the Backplane Ports are enabled, the ***iConverter*** module can communicate via the Ethernet Backplane Link A and B, with other switch-based modules in adjacent slots. The Backplane Port A and Port B can be independently enabled.

When the 4Tx Backplane Ports A and B are enabled (configurable using board-mounted DIP-switches "BP A EN" and "BP B EN"), they connect via the chassis' Backplane Links (A and B) to the adjacent module-slots on the left and right side of the 4Tx module. Through



the 10/100 Ethernet Bankplane Links, the 4Tx module can expand network configuration with other switch-based ***iConverter*** modules that have Backplane Ports, such as the 10/100M or an additional 4Tx.

## APPLICATION EXAMPLE:

### 4Tx Backplane Application:

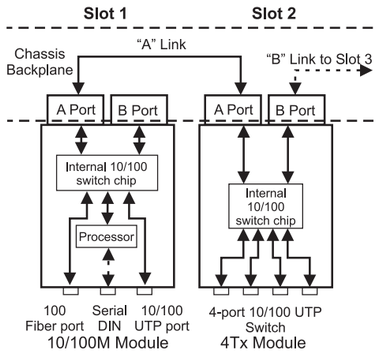


**Fig. 1 4Tx Backplane Application**

Figure 1 illustrates one of the many applications of the 4Tx when used in an ***iConverter*** Chassis. By enabling Backplane Port A on both modules, the 4Tx in slot 2 is communicating to the 10/100M in slot 1 via the Backplane Link A.

The connected ***iConverter*** 10/100M module is a 10/100Mbps UTP to Fiber media converter with integrated management capability. The 10/100M provides the long-haul network uplink via the "100 Fiber Port", and the 4Tx distributes the network service locally via the 4-port 10/100 UTP Switch along with the 10/100M's 100 UTP Port. Therefore the 4Tx and the 10/100M form a managed 5-port switch with a fiber uplink. Additional expandability is available by connecting other ***iConverter*** modules to the chassis.



## DIP-SWITCH SETTINGS:

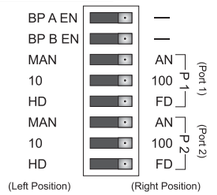


**Fig. 2 4Tx DIP-Switch Label**

### Backplane Port A Enable/Disable "BP A EN" DIP-Switch:

When this DIP-switch is in the RIGHT position (factory default), the 4Tx Backplane Port A is disabled and isolated from the Backplane. To enable the Backplane Port A, the DIP-switch should be set to the "BP A EN" position. Enabling the 4Tx Backplane Port A allows Ethernet connectivity to an adjacent module via the Backplane "A" Link.

### Backplane Port A Enable/Disable "BP B EN" DIP-Switch:

When this DIP-switch is in the RIGHT position (factory default), the 4Tx Backplane Port B is disabled and isolated from the Backplane. To enable the Backplane Port B, the DIP-switch should be set to the "BP B EN" position. Enabling the 4Tx Backplane Port B allows Ethernet connectivity to an adjacent module via the Backplane "B" Link.

### UTP Auto/Manual Negotiate "AN / MAN" DIP-Switch (for Port 1 or Port 2):

When this DIP-switch is in the UTP Auto-Negotiate "AN" position (factory default), the designated UTP port automatically determines the speed and duplex mode of the connecting UTP device. If the connecting UTP device cannot provide the proper signal to indicate its own mode of operation, then the DIP-switch should be set to the UTP Manual mode "MAN" position. Manual mode requires manually configuring the UTP port to match the speed and the duplex mode of the connecting UTP device (configurable using the "10/100" and "HD/FD" DIP-switches).



When a UTP port is configured for Auto-Negotiation, either by setting the "AN/MAN" DIP-switch to "AN" position or via software control, automatic crossover detection is enabled for that particular UTP port. Automatic crossover detection is disabled when the UTP port is configured for manual negotiation.

### UTP 10/100Mbps "10/100" DIP-Switch (for Port 1 or Port 2):

When the UTP "AN/MAN" DIP-switch (described above) is in the manual "MAN" position, the "10/100" DIP-switch determines the speed of operation for the designated UTP port. Setting the "10/100" DIP-switch to UTP 100Mbps "100" position (factory default) forces the UTP port to operate at 100Mbps. Setting this DIP-switch to UTP 10Mbps "10" position forces the UTP port to operate at 10Mbps. Adjust the "10/100" DIP-switch to match the speed of the connecting UTP device.

When the UTP "AN/MAN" DIP-switch is in the Auto-Negotiate "AN" position and the UTP 10/100 DIP-switch is in the "100" position, the UTP port Auto-Negotiates to 100Mbps or 10Mbps. When in the "10" position, the UTP port only operates at 10Mbps.

### UTP Full/Half-Duplex "HD/FD" DIP-Switch (for Port 1 or Port 2):

When the UTP "AN/MAN" DIP-switch (described above) is in the manual "MAN" position, the UTP Full/Half-Duplex "HD/FD" DIP-switch determines the duplex operation mode for the UTP port. Setting the UTP Full/Half-Duplex "HD/FD" DIP-switch to UTP Full-Duplex "FD" (factory default) position forces the UTP port to operate in Full-Duplex. Setting this DIP-switch to UTP Half-Duplex "HD" forces the UTP port to operate in Half-Duplex. Adjust the UTP Half/Full-Duplex DIP-switch to match duplex mode the connecting UTP device.

When the UTP "AN/MAN" DIP-switch is in the Auto-Negotiate "AN" position and the UTP Full/Half Duplex DIP-switch is in the Full-Duplex "FD" position, the UTP port Auto-Negotiates to Full or Half-Duplex. When in the Half-Duplex "HDX" position, the UTP port functions only in Half-Duplex.



### Port 1 UTP Crossover "Workstation/Switch" Switch (not shown):

When the UTP "AN/MAN" DIP-switch (described above) is in the manual "MAN" position, the "Workstation/Switch" switch is set depending on the type of network device which is connected to Port 1. When connecting Port 1 to a workstation, set switch to Straight-Through (=) "Workstation" position (factory default). When connecting to a network switch or a hub, set switch to crossover (X) "Switch" position.

### Software Controlled Switch Settings:

Additional settings are available via software control when a 4Tx is installed in an ***iConverter*** chassis with a Management Module, such as a Network Management Module (NMM) or a 10/100M Media Converter with Integrated Management. The following settings can be controlled via Serial Console/Telnet Console, ***NetOutlook*** Management Software or other third-party SNMP-based clients:

- Enabling 10/100 Ethernet Backplane Port A and B
- UTP Ports 1-4 Auto/Manual Negotiation mode selection
- UTP Ports 1-4 10/100 speed selection
- UTP Ports 1-4 Full/Half Duplex mode selection
- PortVLAN for UTP Ports and Backplane Ports
- Port Access Control for UTP Ports
- MIB Statistics Reporting

Software controlled settings can be selected to override DIP-switch settings.

**For more information on using and configuring the Advanced Features, please refer to the *NetOutlook* Management Software user manual.**



## 4Tx SPECIFICATIONS:

| | |
|---|---|
| **Model Type** | **4Tx** |
| **Protocols** | 10BASE-T, 100BASE-TX |
| **UTP Connectors** | RJ-45 |
| **Controls** | UTP X-over (Port 1), BP Enable, Auto/Man, 10/100, FDX/HDX |
| **LED Displays** | Power, 10/100 UTP Link |
| **Dimensions** | W:0.85" x D:4.5" x H:2.8" |
| **Weight** | 8 oz. |
| **Compliance** | UL, CE, FCC Class A |
| **Power Requirement** | 0.9A @ 3.3VDC (typical) |
| **Temperature** | Standard: 0 to 50º C<br>Wide: -40 to 60º C<br>Storage: -40 to 80º C |
| **Humidity** | 5 to 95% (non-condensing) |
| **Altitude** | -100m to 4000m |
| **MTBF (hrs)** | 910, 000 |



### Warning

The operating description in this Instruction Manual is for use by qualified personnel only. To avoid electrical shock, do not perform any servicing of this unit other than that contained in the operating instructions, unless you are qualified and certified to do so by Omnitron Systems Technology, Inc.

### Warranty

This product is warranted to the original purchaser against defects in material and workmanship for a period of TWO YEARS from the date of shipment. A LIFETIME warranty may be obtained by the original purchaser by REGISTERING this product with Omnitron within 90 days from the date of shipment. TO REGISTER, COMPLETE AND MAIL OR FAX THE ENCLOSED REGISTRATION FORM TO THE INDICATED ADDRESS. Or you may register your product on the Internet at www.omnitron-systems.com. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge to return the product to Buyer's designated US address using Omnitron's standard shipping method.

### Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.



### Exclusive Remedies

The remedies provided herein are the Buyer's sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

## TECHNICAL SUPPORT:

For help with this product, contact our Technical Support:

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## Notes:



## Notes:

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